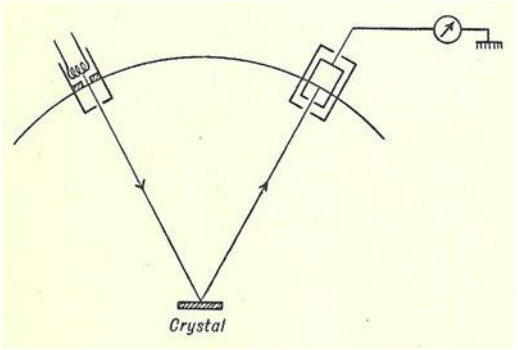
1927: Wave properties of electrons demonstrated

Lester Germer(right) and Clinton Davisson(left)



Original experiment design

Discovery:
Lester Germer and Clinton Davisson were originally attempting to explore the structure of an atom, but an equipment breakdown in 1925 ultimately led them to a very different discovery.

Experiment:
During an attempt to probe the crystalline structure of Nickel, Mr. Germer and Mr. Davisson bombarded the surface of a nickel lattice with electrons, and examined the angles of refraction.

Change of Experimental Conditions:
A mechanical breakdown resulted in an oxygen exposure, causing an oxide film to form. Due to this contamination of experimental medium, the scientists had no choice but to reheat the metal, changing the crystalline structure.

Results:
The newly formed lattice acted very much like a diffraction grating, and the resulting diffraction very closely matched de Broglie's wave property predictions. It took a year for Davisson to discover what they had found, and they went back to investigate their previous works.

Application:
Even though this discovery lacks many practical applications, it still greatly advanced our understanding of the subatomic universe.

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